

**REMARKS**

Claims 1, 2, 6-10, and 16-18 are pending in the application.

As a preliminary matter, Applicants note that claims 3-5 and 11-15 have been withdrawn from consideration, based on the Response to Restriction Requirement filed June 20, 2002. Although the Office Action Summary correctly indicates the pending claims, the Detailed Action (page 2) incorrectly indicates that claims 1, 2, 6-10, and 16-18 are withdrawn from further consideration.

Claims 1, 2, and 6-10 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements. Claims 1, 6-10, and 16-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Paoli (US 5,699,375). Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over FIG. 1 of Applicant's Admitted Prior Art. Applicants respond to the rejections in the following manner.

**35 U.S.C. § 112**

Claims 1 and 6 are amended herein. These amendments are believed to be self-explanatory and overcome the Examiner's § 112 rejection by clarifying the structural relationships between the elements of the claims. The proposed amendment to claim 6 incorporates the limitations of claim 7 into claim 6, as well as clarifying the structural relationships of the limitations from original claim 7.

Accordingly, claim 7 is cancelled and claims 8 and 9 are amended to depend from claim 6. Also, claim 9 is amended to further define the relationship of the lower electrode to the substrate.

**35 U.S.C. § 102(b)**

Applicants respectfully traverse the rejection of claims 1, 6-10, and 16-18, based on Paoli, with the following comments.

Claims 1 and 6 require a first active layer disposed on the first lower reflector. Paoli fails to teach or suggest this limitation of the claim. Instead, Paoli discloses an active layer 108 formed on a spacer layer 106, rather than on the DBR 104. (See FIG. 1). Moreover, there is no suggestion in Paoli of providing an active layer on a reflector.

Also, with regard to proposed amended claim 1, Paoli does not disclose or suggest that the semiconductor layers of the reflectors have different refractive indices. Paoli is silent concerning refractive indices. Since ambiguities in the references should not be construed against the Applicants, Applicants respectfully submit that it is unreasonable for the Examiner to interpret Paoli to teach or suggest that its semiconductor layers have different refractive indices.

Therefore, claims 1 and 6 and their dependent claims 2 and 8-10, respectively, are allowable over the prior art.

In a manner similar to that for claims 6 and 7, claims 16 and 18 are amended and claim 17 is cancelled. Applicants submit that claims 16 and 18 are allowable for the same reasons as noted above for claims 1 and 6.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U. S. Application No. 09/835,319

**35 U.S.C. § 103(a)**

The Examiner rejects claim 2 based on FIG. 1 of Applicants' Admitted Prior Art (AAPA). Applicants submit that claim 2 is allowable over the AAPA, at least because of its dependence from independent claim 1.

Furthermore, the AAPA does not disclose a multi-wavelength surface emitting laser having first and second surface emitting lasers that emit light at first and second wavelengths, as required by claim 1, from which claim 2 depends. Rather, FIG. 1 is limited to a single surface emitting laser which emits a single wavelength of light. Therefore, claim 2 is allowable over the prior art.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Cameron W. Beddard  
Registration No. 46,545

SUGHRUE MION, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, D.C. 20037-3213  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

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**APPENDIX**  
**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

**Claims 7 and 17 are canceled.**

**The claims are amended as follows:**

1. (Amended) A multi-wavelength surface emitting laser for emitting light having a first wavelength and light having a second wavelength, the laser comprising:

a substrate;

a first surface emitting laser which emits light having a first wavelength, directly formed on a portion of an upper surface of the substrate and including,

a first lower reflector formed of two alternately deposited semiconductor material layers having a same type of impurity, but different refractive indices, the first lower reflector disposed on the upper surface of the substrate;

a first active layer disposed on the first lower reflector; and

a first upper reflector formed of two deposited semiconductor material layers having different refractive indices and an opposite type of impurity to that of the first lower reflector, the first upper reflector disposed on the first active layer;

a second surface emitting laser which emits light having a second wavelength, directly formed on a portion of an upper surface of the substrate neighboring the first surface emitting laser and including;

a second lower reflector formed of two alternately deposited semiconductor material layers having different refractive indices and a same type of impurity, the second lower reflector disposed on the upper surface of the substrate;

a second active layer disposed on the second lower reflector; and

a second upper reflector formed of two deposited semiconductor material layers having different refractive indices and an opposite type of impurity to that of the second lower reflector, the second upper reflector disposed on the second active layer;

a lower electrode layer disposed on a lower surface of the substrate;

a first upper electrode formed on the first upper reflector, which electric power is applied to; and

a second upper electrode formed on the second upper reflector, which electric power is applied to.

6. (Amended) A multi-wavelength surface emitting laser for emitting light having a first wavelength and light having a second wavelength, the laser comprising:

a substrate;

a first surface emitting laser which emits light having a first wavelength formed on a first portion of the substrate; and

a second surface emitting laser which emits light having a second wavelength formed on a second portion of the substrate[.].

wherein the first surface emitting laser includes,

a first lower reflector disposed on the substrate;

a first active layer disposed on the first lower reflector; and

a first upper reflector disposed on the first active layer, and wherein the second surface emitting laser includes,

a second lower reflector disposed on the substrate;

a second active layer disposed on the second lower reflector; and

a second upper reflector disposed on the second active layer.

8. (Amended) The laser as claimed in claim [7]6, wherein the first lower reflector is formed of two alternately deposited semiconductor material layers having a same type of impurity, but different refractive indices, and the first upper reflector is formed of two deposited semiconductor material layers having different refractive indices and an opposite type of impurity to that of the first lower reflector, and

wherein the second surface emitting laser is formed of two alternately deposited semiconductor material layers having different refractive indices and a same type of impurity, and the second upper reflector is formed of two deposited semiconductor material layers having different refractive indices and an opposite type of impurity to that of the second lower reflector.

9. (Amended) The laser as claimed in claim [7]6, further including,

a lower electrode disposed on a lower surface of the substrate;

a first upper electrode formed on the first upper reflector, which electric power is applied to; and

a second upper electrode formed on the second upper reflector, which electric power is applied to.

16. (Amended) A multi-wavelength surface emitting laser for emitting light having a first wavelength and light having a second wavelength, the laser comprising:

a substrate;

first laser emitting means for emitting a laser having a first wavelength, the first laser emitting means disposed on the substrate; and

second laser emitting means for emitting a laser having a second wavelength, the second laser emitting means disposed on the substrate[.],

wherein the first laser emitting means includes,

first laser reflecting means disposed on the substrate; and

first energy transition means for generating a laser beam, the first energy transition means disposed in the first reflecting means, and

wherein the second laser emitting means includes,

second laser reflecting means disposed on the substrate; and

second energy transition means for generating a laser beam, the second energy transition means disposed in the second reflecting means.

18. (Amended) The laser as claimed in claim 16, further including:

lower electrode means disposed on a lower surface of the substrate;

first upper electrode means for accepting electric power disposed on an upper surface of the first laser reflecting means; and

second upper electrode means for accepting electric power disposed on an upper surface of the second laser reflecting means.